USSR

ASHIROV, E. G., et al, Radiats. dozimetriya i spektrometriya ioniziruyushch. izluch. (Radiation Dosimetry and Spectrometry of Ionizing Radiation -- Collection of Works), Tashkent, "Fan," 1970, pp 230-234 (from RZh-Fizika, No 4, Apr 71, Abstract No 4V578)

obtained in the spectra found from the spectra calculated for the vertical channels of the reactor. The best approximation to the calculated spectrum using the spectrum found was obtained by the use of a simple approximation $\Phi(E) = (\alpha_1/E) + \alpha_2\Phi_0(E)$; this is explained by the similarity of the form of the spectrum in water-water reactors to the fission spectrum.

2/2

1/2 025 UNCLASSIFIED PROCESSING DATE--11DEC70
TITLE--TREATMENT OF DEFECTS IN G13L STEEL CASTINGS UNDER WELDING -U-

AUTHOR-(03)-ANDREYEV, N.I., SHAKHOV, A.YE., GUREVICH, L.I.

COUNTRY OF INFO--USSR

SOURCE--MOSCOW, SVAROCHNOYE PROIZVODSTVO, NO. 6, 1970, PP 42-43

DATE PUBLISHED--------70

SUBJECT AREAS--MECH., IND., CIVIL AND MARINE ENGR

TOPIC TAGS--STEEL, THERMAL EFFECT, PHYSICAL CHEMISTRY PROPERTY, OXIDATION, WELD DEFECT, STEEL WELDING, METAL CASTING, METAL CUTTING/(U)G13L STEEL

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY FICHE NO----FD70/605041/B07 STEP NO--UR/0135/70/000/006/0042/0043

CIRC ACCESSION NO--AP0142717
UNCLASSIFIED

2/2 025 UNCLASSIFIED PROCESSING DATE--11DEC7?

CIRC ACCESSION NO--AP0142717

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. ON THE EDGES OF CUTS IN FIRED GLAS STEEL APPEAR SLITS OF UP TO 5 MM IN DEPTH, CAUSED BY HIGH TENSIONS ON THE CUT EDGES IN COOLING AND BY PROCESSES OCCURRING IN THE STEEL DURING THE CUTTING. TO REDUCE THESE SLITS THE INTENSITIES OF THE PROCESSES IN THE STEEL MUST BE LOWERED. THIS ENTAILS MAKING THE CUTS IN A PROTECTIVE ATMOSPHERE WITH MINIMUM HEAT INTAKE. TO CHOOSE THE BEST METHOD FOR EXECUTING THIS SCHEME, THE AUTHORS INVESTIGATED VARIOUS TYPES OF METAL CUTTING. THE RESULTS OF THEIR RESEARCH ARE PRESENTED. THEY FOUND THAT THE FORMATION OF SLITS CAN BEST BE REDUCED BY USING AIR ARC OR PLASMA CUTTING OF THE STEEL WITH MINIMUM HEAT APPLICATION AND ACCELERATED COOLING. THEY ALSO DISCOVERED THAT THE CAUSES OF THE SLIT FORMATION ARE THE THERMOPHYSICAL CHARACTERISTICS OF THE STEEL, A HIGH PHOSPHORUS CONTENT, BURNING OUT OF CARBON AND MANGANESE, THE PRECIPITATION OF CARBIDES, THE GROWTH OF THE GRAINS AND THE OXIDATION OF THEIR EDGES.

FACILITY: IRKUTSK POLYTECHNICAL INST. FACILITY: IRKUTSK HEAVY MACHINERY CONSTRUCTION PLANT.

UNCLASSIFIED

USSR

UDC 547.02:632.4:633.15:582.282.285.12

SLEPYAN, E. I., and GUREVICH, L. S., Botanical Institute imeni V. L. Komarova, USSR Academy of Sciences, Leningrad

"Dicarboxylic and Tricarboxylic Acids of Zea mays and Their Possible Role in the Pathogenesis of Ustilago maydis (DC.) CDA-Induced Common Corn Smut"

Leningrad, Mikologiya i Fitopatologiya, Vol 7, No 4, 1973, pp 327-333

Abstract: Studies made on the concentrations of the organic acids involved in the Krebs cycle in corn infected with Ustilago maydis showed that the concentrations of the acids (malic, aconitic, citric, glyceric, succinic) differed in affected and unaffected tissues. During teratogenesis the acids do not accumulate in the rapidly dividing cells since they are rapidly mobilized for the synthesis of amino acids and proteins. In the normal tissues cell division had ceased, protein synthesis is limited, and the metabolites of the Krebs cycle can accumulate. Furthermore, the normal tissues surrounding a focus of pathologic neoplasia may serve as a depot from which the di- and tricarboxylic acids may be withdrawn for the benefit of the proliferating tissues.

1/1

1/2 022 UNCLASSIFIED PROCESSING DATE--09OCT70
TITLE--ON THE POTENTIAL INFORMATIVENESS OF ELECTROCARDIOGRAMS -U-

AUTHOR-(03)-PINSKER, I.SH., SHAKIN, V.V., GUREVICH, L.S.

COUNTRY OF INFO--USSR

SOURCE--EKSPERIMENTAL'NAYA KHIRURGIYA I ANESTEZIOLOGIYA, 1970, NR 2, PP 12-18
DATE PUBLISHED--------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--ELECTROCARDIOGRAPHY, HEART DISEASE, DIAGNOSTIC MEDICINE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1990/0641 STEP NO--UR/0481/70/000/002/0012/0018

CIRC ACCESSION NO--AP0108852
UNCLASSIFIED

2/2 022 UNCLASSIFIED PROCESSING DATE--09OCT70
CIRC ACCESSION NO--AP0108852
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE TASK OF PRELIMINARY ANALYSIS OF THE DIAGNOSTIC VALUE OF ELECTROCARDIOGRAMS IS DISCUSSED. A METHOD OF SINGLING OUT FROM ANY NEW (ADDITIONAL) ELECTROCARDIOGRAM OF ALL THE PARAMETERS, WHICH MAY CONTAIN DIAGNOSTIC INFORMATION, HAS BEEN ELABORATED. THE AUTHORS PROPOSE AN OPTIMAL, ECONOMIC AND PHYSICALLY SUBSTANTIATED SYSTEM OF REGISTRATION AND TREATMENT OF ELECTROCARDIOGRAMS. FACILITY: INSTITUT PROBLEM PEREDACHI INFORMATSII AN SSSR, MOSCOW.

UNCLASSIFIED

Heat, Combustion, Detonation

UDC 536.46:533.6

USSR

GUREVICH, M. A., OZEROVA, G. Ye., STEPANOV, A. M.

"Calculation of Flame Propagation Rate in a Gaseous Suspension of Particles of Solid Fuel"

V sb. Goreniye i vzryv (Combustion and Explosion -- Collection of Works), Moscow, "Nauka", 1972, pp 199-203 (from RZh-Mekhanika, No 3, Mar 73, Abstract No 3B968)

Translation: The problem of the propagation of a plane flame front in a one-dimensional flow of a suspension of singly fractioned particles of solid fuel in a gas containing an oxidizer is considered. It is assumed that heating of the cold mixture due to heat release from the reaction occurs only in the molecular heat conductivity of the gas. This rate of displacement of the original gas suspension at which longitudinal temperature fields and reagent concentrations become possible is taken as the flame propagation rate. The flame propagation rate is calculated as a function of the initial parameters by numerical methods. Authors' abstract.

1/1

UDC 536.46:533.6

USSR

GUREVICH, M. A., OZEROVA, G. Ye., STEPANOV, A. M.

"Calculation of the Combustion Rate of Metal Particles Considering Oxide Condensation"

V sb. Goreniye i vzryv (Combustion and Explosion -- Collection of Works), Moscow, "Nauka", 1972, pp 175-181 (from RZh-Mekhanika, No 3, Mar 73, Abstract No 3B967)

Translation: The rate of steam-phase combustion of a fixed metal particle is calculated. At any point (including particles at the surface and on the combustion surface) the partial pressure of the oxide vapors is considered equal to the pressure of the saturated vapor at that temperature, which is established at a given point. It is shown that in the presence of oxide condensation in the space surrounding the particle that loss of matter is also unavoidable with volumetric sources of heat. It is assumed that the condensed oxide collects on the surface, the radius of which is determined from the condition that the mass velocity of the gas is equal to zero on it. The calculated combustion rate constants for magnesium particles are compared with experimental data of other authors. Authors' abstract.

1/1

USSR UDC 681.333

GUREVICH, M. A., VERKHORUBOV, B. A.

"A Device for Simulating a Heat Exchanger"

Moscow, Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No 7, Mar 71, Author's Certificate No 295123, Division G, filed 16 Jun 69, published 4 Feb 71, p 148

Translation: This Author's Certificate introduces a device for simulating a heat exchanger. The device is made in the form of sections corresponding to the reduced length of the heat exchanger and contains adders, integrators, and multipliers. As a distinguishing feature of the patent, the device is simplified and provision is made for obtaining the static and dynamic characteristics of any channels and increasing precision by connecting the outputs of the adders of the resultant heat flux in each of the sections to the inputs of the accumulator-integrators for the heat of the coolants and the wall. The outputs of these integrators are connected through constant-coefficient multipliers to the inputs of the adders for the temperature differential. The outputs of these adders are connected

1/2

USSR

GUREVICH, M. A., VERKHORUBOV, B. A., Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki, No 7, Mar 71, Author's Certificate No 295123, Division G, filed 16 Jun 69, published 4 Feb 71, p 148

through a second set of constant-coefficient multipliers to the inputs of the adders for the resultant flux. The outputs of the temperature-increment adders are connected through a third set of constant-coefficient multipliers to the inputs of multipliers whose outputs are connected to the inputs of the adders for the resultant flux.

2/2

USSR UDC:536.468

GUREVICH, M. A., LYDKIN, V. M., STEPANOV, A. M., Leningrad

"Ignition and Combustion of a Gas Suspension of Magnesium Particles"

Novosibirsk, Fizika Goreniya i Vzryva, Vol. 6, No. 3, Sep 70, pp. 335-342

Abstract: The problem of ignition and combustion of a polyfractional gas suspension of magnesium particles is studied. The temperature and composition of the gas medium, as well as the concentration of particles of the same size are assumed identical throughout the entire volume of the gas suspension. The composition of the gas at each moment in time is considered to remain at the chemical equilibrium point, while the partial pressure of the gaseous oxide is equal to the saturated vapor pressure. The temperature of the condensed oxide is assumed equal to the temperature of the gas. Radiative heat exchange and heat and mass transfer with the external medium are not considered. Several versions of combustion of suspended magnesium particles in air are calculated. In all cases the initial distribution of particle masses by dimensions in considered linear. Results of the versions of calculation are presented.
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USSR UDC:536.468

GUREVICH, M. A., OZEROVA, G. Ye., STEPANOV, A. M., Leningrad

"Heterogeneous Ignition of an Aluminum Particle in Oxygen and in Water Vapor"

Novosibirsk, Fizika Goreniya i Vzryva, Vol. 6, No. 3, Sep 70, pp. 326-335

Abstract: Experiments have determined that the limiting temperature of the medium for ignition of an aluminum particle first decreases with increasing particle size, then increases, approaching the fusion temperature of the oxide. This latter fact cannot be explained on the basis of the elementary theory of thermal explosion alone; some other factor, strongly influencing the process of heat and mass transfer between particle and medium must be considered. Analysis of experimental data indicates that this important factor is the oxide film covering the particle. Thus, two values of temperature of the medium are determined: the first from the limiting condition for autoignition of the particle, produced from the elementary theory of thermal explosion without considering the diffusion resistance of the oxide film, and the second on the basis of the condition of melting of the

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USSR UDC:536.468

GUREVICH, M. A., OZEROVA, G. Ye., STEPANOV, A. M., Novosibirsk, Fizika Goreniya i Vzryva, Vol. 6, No. 3, Sep 70, pp. 326-335

oxide film. Keeping these in mind, the quasistable heat and mass transfer between a spherical aluminum particle and an oxygen-containing medium is studied. The kinetic constants are determined for the interaction of aluminum with the oxygen contained in the medium and with water vapor.

2/2

1/2 011 UNCLASSIFIED PROCESSING DATE--30OCT70

TITLE--HYDROCARBON COMPOSITION OF PETROLEUM FROM THE YOZNOJ-ISLAM DEPOSIT IN THE TURKMEN SSR -U-

AUTHOR-(04)-GUREVICH, M.G., KOLESNIKOVA, L.P., MOROZOVA, S.F., SAMOZVANTSEVA, M.S.

COUNTRY OF INFO--USSR

SOURCE--GAZOV. DELO 1970, (1), 30-2

DATE PUBLISHED--------70

SUBJECT AREAS--EARTH SCIENCES AND OCEANOGRAPHY, MATERIALS

TOPIC TAGS--PETROLEUM DEPOSIT, CHEMICAL COMPOSITION, AROMATIC HYDROCARBON, CRUDE OIL, GEOGRAPHIC LOCATION, CHROMATOGRAPHIC ANALYSIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--3003/0435 STEP NO--UR/0508/70/000/001/0030/0032

CIRC ACCESSION NO--AP0129660

UNCLASSIFIED

2/2 011 UNCLASSIFIED PROCESSING DATE--30OCT7C

CIRC ACCESSION NO--AP0129660

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. PETROLEUM FROM JURASSIC DOLOMITE SEAMS AT 3500 M IN THIS DEPOSIT YEILDED ON SEPN. BY CAPILLARY CHROMATOG. 11 AND 27PERCENT OF FRACTIONS B. LESS THAN OR EQUALS TO 125DEGREES (A) AND LESS THAN OR EQUAL TO 200DEGREES (B), RESP. IN A WERE DETD. THE INDIVIDUAL C SUB4-8 PARAFFINIC AND C SUB5-9 NAPHTHENIC HYDROCARBONS COMPRISING 75 AND 15PERCENT, RESP., OF IT AND 8.29 AND 1.71PERCENT, RESP., OF THE PETROLEUM. IN B WERE DETD. THE INDIVIDUAL C SUB6-11 AROMATIC HYDROCARBONS COMPRISING 100PERCENT OF IT AND 3.73PERCENT OF THE PETROLEUM. N,ALKANE CONTENT ROSE FROM 54PERCENT IN C SUB5 , TO 71PERCENT IN C SUB8,ALKANES. THE N-ISO RATIO WAS 1.8o FOR THE ALKANES (2.2PERCENT C SUB4, 14.7PERCENT C SUB5, 18.6PERCENT C SUB6, 20.8PERCENT C SUB7, 26.5PERCENT C SUB8), AND THE CYCLOHEXANES CYCLOPENTANES HYDROCARBON RATIO WAS 1.41:1 FOR THE NAPHTHENES. C SUB6, C SUB7, AND C SUB8 COMPDS. COMPRISED 5.67, 22.16, AND 33.12PERCENT, RESP., OF THE AROMATIC HYDROCARBONS. FACILITY: MINKHGP IM. GUBKINA, MOSCOW, USSR.

UNCLASSIFIED

UDC 612.826.4:612.144

USSR

GUREVICH, M. I. and KARTSEVA, A. G.

"Effect of Electrostimulation of the Human Amygdaloid Compex on Hemodynamics"

Kiev, Fiziologichniy Zhurnal, No 5, 1973, pp 637-641

Translation of abstract: The authors studied the hemodynamic changes (cardiac output and heart rate) occurring in epileptics after electrostimulation of the mediobasal nuclei of the amygdaloid complex through implanted electrodes; the values were recorded by the rheocardiographic and electrocardiographic methods. The hemodynamic changes were shown to vary with the location of the electrodes (depth to which they were inserted in the structure under study). Frequent, repeated stimulation and increased intensity of stimulation affected the hemodynamic reactions recorded. Analysis of the results suggests definite specificity and capacity for differentiation on the part of some nuclei of the human amygdaloid complex.

1/1

UDC 612.766.2.13

USSR
GUREVICH

HUREVICH, M. I., and DUKHIN, YE. O., Institute of Physiology imeni O. O. Bogomolets, Academy of Sciences Ukrainian SSR, Kiev

"The Effect of Electrostimulation of Hemodynamic Disturbances in the Case of Prolonged Hypokinesia"

Kiev, Fiziolohichnyy Zhurnal, Vol 19, No 1, 1973, pp 45-51

Abstract: Experiments were carried out with healthy individuals 24-34 years old subjected to bed regime for 30 days (one group) and for 10 days (second group) with the lower part of the body completely immobilized. Some individuals from both groups were subjected to electrical stimulation (muscles of back, abdomen, thigh, shank) twice a day for 45 min each time. The rheographic method was used to record shifts in hemodynamic indicators. In individuals not subjected to electrical stimulation, HBV decreased on the second day of bed regime, and reached 36% in 28-30 days. Increase in HBF was by 21.2% in 10-12 days and it increased by 23 beats (from 93 at the start) 28-30 days later. HBV decreased by 8.6% during the first two days of experiment, followed by tachycardia, and the second increase by 14.6% in 28-30 days. Individuals who received daily electrical stimulation of muscles showed decrease of BBV on 10-12 day of hypokinesia and 17.4% on 28-30th day. Changes in the HBF were observed only at the end of the bed regime period (by 16%). Dynamics of shifts

1/2

USSR

HUREVICH, M. I. and DUKHIN, YE. O., Fiziolohichnyy Zhurnal, Vol 19, No 1, 1973, pp 45-51

in MBV in this case were determined by different relations between BBV and HBF. All hemodynamic indicators were practically normal on 7th day after the termination of hypokinesia in all individuals receiving electrical stimulation. Electrical stimulation in all cases was positive and resembled the training effect. It weakened significantly the negative effect of prolonged hypokinesia on hemodynamic indicators. Changes in MBV were related primarily to HBF in the case of electrical stimulation. A direct effect of electrical stimulation on the cardiovascular system differed during different hypokinesia periods. The most noticeable effect was observed between 10-13th day. Thus, electrical stimulation during stable hypokinesia provides a definite protection against the development of orthostatic disturbances.

2/2

UDC 612.13:797.22

USSR

GUREVICH, M. I., IL'CHEVICH, N. V., KARTSEVA, BRATUS', V. V., and DUKHIN, E. O., Institute of Physiology imeni O. O. Bogomolets, Academy of Sciences, Ukrainian SSR, Kiev

"Effect of Underwater Activity on the Human Cardiovascular System"

Kiev, Fiziologicheskiy Zhurnal, No 5, 1972, pp 606-613

Abstract: Hemodynamic shifts were studied in 10 aqualungers age 18 to 29 after submersion, while exercising under water, and while swimming with an oxygen apparatus. Immediately after submerging to a depth of 5 to 10 m in a No 2 outfit the men exhibited an increase in arterial pressure, decrease in pulse pressure, slowing of the heart rate, reduction in the cardiac output, and increase in resistance of the peripheral blood vessels. The performance of graduated physical exercise under water elevated arterial pressure, slowed the pulse rate, increased the resistance of the peripheral blood vessels, but had little effect on the cardiac output or heart rate. Underwater swimming elevated arterial pressure, slowed the heart rate, decreased the cardiac output, and increased the resistance of the peripheral vessels.

1/1

UDC: 621.317.757(088.8)

USSR

GUREVICH, M. I.

"A Two-Channel Autocompensation Meter for Measuring the Amplitude of Repeated Nanosecond Pulses"

USSR Author's Certificate No 286067, filed 25 Oct 68, published 4 Jun 71 (from RZh-Radiotekhnika, No 3, Mar 72, Abstract No 3A327 P)

Translation: In order to increase measurement accuracy and input impedance, as well as to simplify the design of the input section of conventional two-channel autocompensation instruments for measuring the amplitude of repeated nanosecond pulses, it is proposed that the diode elements of compensation channels be connected directly to the input of the instrument, and that they be made in the form of n series-connected diodes in the second channel. It is also proposed that the output of the second channel be connected to a subtractor through a divider with a division coefficient of n/m. A. K.

1/1

Pulse Technique

UDC: 621.374.5(088.8)

USSR

GUREVICH, M. L.

"A Device for Converting the Amplitude of Nanosecond Pulses"

USSR Author's Certificate No 254562, filed 4 Nov 67, published 9 Mar 70 (from RZh-Radiotekhnika, No 11, Nov 70, Abstract No 11G242 P)

Translation: Existing devices for converting the amplitude of nanosecond pulses to DC voltage contain a difference circuit and two conversion channels with a nonlinear element and expansion capacitor connected across the input of each of the conversion channels. Because of the presence of a divider at the input, the device has low input impedance. In the proposed device, the channel inputs are connected in parallel to the source of pulses to be converted, and the outputs are connected to a subtraction circuit. The first channel is connected directly to the subtraction circuit, while the second is connected through a resistance voltage divider. The nonlinear element in the first channel contains one semiconductor diode, while that in the second channel contains two. This increases the input impedance and makes it possible to reduce the conversion error for short pulses. Depending on requirements, the amplitude of the nanosecond pulses may be converted to DC voltage, pulse amplitude with longer duration, time interval or frequency. L. K.

1/1

UDC: 541.127:535.243.082

USSR

GUREVICH, M. M., KOLYADIN, K. M., LEYKIN, S.M.

"High-Speed Spectrophotometers for Investigation of Reaction Kinetics"

Optich. i Titrometrich. Analizatory Zhidk. Sred [Optical and Titrometric Analyzers for Liquid Media], Reports of All Union Conference, 1971, Part 1, Tbilisi, 1971 pp 14-19 (translated from Referativnyy Zhurnal Metrologiya i Izmeritel'naya Tekhnika, No 2, 1972, Abstract No 2.32.1089 by V. S. Krasnova)

Translation: A description and diagram of the domestic SP-127M (SPV-2) high speed spectrophotometer is presented. This instrument is designed for investigation of the kinetics of chemical and biochemical reactions and rapid spectrophotometry of unchanged objects. The SP-127M is a two-channel spectrophotometer with a mirror monochromator and photoelectric recording. The spectral area of operation of the device is 250 - 1000 mμ, divided into 4 ranges: 250-470, 400-650, 600-850 and 800-1000. The FEU-39 is used for operation in the first 2 ranges, the FEU-28 is used for operation in the 600-1000 mμ range. The device has 2 operating speeds - 200 and 500 spectra per second. The device is equipped with an attachment for performance of photochemical reactions. The SP-154 spectrophotometer with spectral range 350-700 mμ and 3 operating speeds - 100, 200 and 400 spectra per second - is based on the

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UDC: 541.127:535.243.082

USSR

GUREVICH, M. M., KOLYADIN, K. M., LEYKIN, S. M., Optich. i Titrometrich. Analizatory Zhidk. Sred [Optical and Titrometric Analyzers for Liquid Media], Reports of All Union Conference, 1971, Part 1, Tbilisi, 1971, pp k4-k9 (translated from Referativnyy Zhurnal Metrologiya i Izmeritel'naya Tekhnika, No 2, 1972, Abstract No 2.32.1089 by V. S. Krasnova)

SP-127M. The photometer includes an integrating sphere, allowing reactions involving production of a sediment to be studied. 3 figures; 5 biblio refs.

2/2

USSR UDC 535.853.36

GUREVICH, M. M., Doctor of Sciences, LAZAREV, V. P.

"Instrument for Measuring the Photometric and Spectrophotometric Characteristics of Materials in the 0.3-2 Micron Range"

Leningrad, Optiko-mekhanicheskaya promyshlennost' No 11, Nov 71, pp 34-37

Abstract: This article presents a description of a FM-85 photometer intended for rapid determination (few minutes) of integral and spectral reflection coefficients of materials and also integral and spectral transmission coefficients of transparent materials. It was developed, tested and accepted for industrial use at the Zagorsk Optical Instrument Factory (ZOMZ). Measurements can be conducted in the 0.3-2.5 micron range, both in monochromatic and in complex light fluxes of arbitrary spectral content. A schematic diagram and a photograph of the instrument are presented. Formulas are derived for reflexion and transmission coefficients. Indications for instrument adjustment are given, and measuring techniques are described.

1/1

1/2 018 UNCLASSIFIED PROCESSING DATE--04DEC70

TITLE--SPV-2 HIGH SPEED SPECTROPHOTOMETER -U-

AUTHOR-(03)-GUREVICH, M.M., KOLYADIN, K.I., KOSYANENKO, V.A.

COUNTRY OF INFO--USSR

SOURCE--LENINGRAD, OPTIKO MEKHANICHESKAYA PROMYCHLENNOST' NO 1, JAN 70, PP 32-33

DATE PUBLISHED-------70

SUBJECT AREAS--PHYSICS

TOPIC TAGS--SPECTROPHOTOMETER, SPECTROPHOTOMETRY/(U)SPV2 SPECTROPHOTOMETER

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED

PROXY REEL/FRAME--1997/0400 STEP NO--UR/0237/70/000/001/0032/0033

CIRC ACCESSION NO--AP0119343

UNCLASSIFIED

2/2 018 UNCLASSIFIED PROCESSING DATE--04DEC70

CIRC ACCESSION NO--AP0119343

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. A HIGH SPEED SPV-2 SPECTROPHOTOMETER, WHICH IS READY TO BE PRODUCED IN SERIES, IS BRIEFLY DESCRIBED. IT IS INTENDED FOR INVESTIGATING THE KINETICS OF CHEMICAL, PHOTOCHEMICAL, AND OTHER REACTIONS RELATED TO THE VARIATION OF SPECTRAL PROPERTIES OF SUBSTANCES TAKING PART IN THESE PROCESES. IT CAN ALSO BE USED FOR A HIGH SPEED SPECTROPHOTOMETRY OF INVARIABLE OBJECTS, AS FOR THE QUALITY CONTROL OF SERIAL PRODUCTION, FOR MATCHING OF CONCENTRATIONS IN CHEMICAL PRODUCTION ETC. A SCHEMATIC DIAGRAM OF THE INSTRUMENT AND A BLOC DIAGRAM OF THE EQUIPMENT ARE INCLUDED. THE TECHNICAL DATA AND CHARACTERISTICS ARE PRESENTED.

UNCLASSIFIED

USSR

UDC 669-157.96

VOSKRESENSKAYA, N. L., GRIGOREV, V. S., GUREVICH, M. YE., KRASIL'NIKOV, V. S., LARIKOV, L. N., RYBALKINA, L. V., and SINITSKIY, N. YE., Institute of Metal Physics, Academy of Sciences Ukr SSR

"Physical Nature of the Processes of formation of Complex Mechanical Properties During the Tempering of a Hardened Alloyed Structural Steel"

Kiev, Metallofizika, No 40, 1972, pp 53-56

Abstract: Calorimetric, x-ray, volumetric, and mechanical tests were used to study the physical processes which take place in the tempering of a complexly alloyed structural steel (approximately 0.33% C, 3% Cr, 1% Mo, Ni, W, and V). The magnitudes of thermal and volume effects were determined in the tempering stages. The types of processes occurring and their effect on the formation of mechanical properties were analyzed. It was established that the optimum combination of strength and ductile properties, obtained as a result of tempering the investigated steel for an empirically selected mode, was associated with the occurrence of processes of internal stress relaxation, primarily at points of their maximum concentration. The hypothesis was made that this phenomenon is related to the development of processes of diffusion "closing" microcracks which cause brittle failure of the material. 3 figures, 6 bibliographic references.
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USSR

UDC 546.3.004.5.001.2

LARIKOV, L. N., CHEREPIN, V. T., GUREVICH, M. Ye.

"Automation of Testing and Investigation of Metals"

Avtomatizatsiya Kontrolya i Issledovaniya Metallov [English Version Above], Tekhnika Press, Kiev, 1971, 198 pages.

Translation of Annotation: The basic principles and methods of automatic study and testing of the properties of metals and alloys using electronic equipment are presented, modern precision devices are described, and problems of the prospective development of devices, measuring complexes and systems used in order to automate scientific experimentation in the area of study of the properties of metals and alloys are analyzed. The book is designed for scientific and engineering workers involved with problems of testing and study of the properties of metals in the metallurgical, machine building, instrument building and other branches of industry, and also may be useful for teachers and students in the corresponding specialties in technical universities. 5 Tables; 92 Figures; 231 Biblio. Refs.

TABLE OF CONTENTS

USSR UDC 546.3.004.5.001.2

LARIKOV, L. N., CHEREPIN, V. T., GUREVICH, M. Ye., Avtomatizatsiya Kontrolya i Issledovaniya Metallov, Tekhnika Press, Kiev, 1971, 198 pages.

USSR UDC 546.3.004.5.001.2

LARIKOV, L. N., CHEREPIN, V. T., GUREVICH, M. Ye., Avtomatizatsiya Kontrolya i Issledovaniya Metallov, Tekhnika Press, Kiev, 1971, 198 pages.

3/3

USSR UDC 536.72.2(088.8)

LARIKOV, L. N., GUREVICH, M. YE., Institute of Metal Physics, Ukrainian SSR Academy of Sciences

"Determination of Thermodynamic Characteristics of Materials"

USSR Author's Certificate No 249690, filed 17 Nov 67, published 4 Jan 70 (from RZh-Metrologiya i Izmeritel'naya Tekhnika, No 8, Aug 70, Abstract No 8.32.657 P)

Translation: A method is proposed for the determination of thermodynamic characteristics of materials by the way of comparison of their thermal and volumetric effects. In order to increase the accuracy of the results the measurement of change of heat content and volume is carried out using the same specimen and standard instrument, for example by the calorimetric and dilatometric methods. Their ratios are measured continuously and are compared with the memory inserted ratios which are characteristic for the processes of all possible types. The thermodynamic characteristics are determined according to parity with the established accuracy of comparable values.

V. S. K.

1/1

Miscellaneous

USSR UDC 669.017.3

GUREVICH, M. YE., LARIKOV, L. N., and SHMATKO, O. A., Institute of Metal Physics Academy of Sciences Ukr SSR

"The Size and Spectrums of Volume Changes in Metal Systems"

Kiev, Metallofizika, No 32, 1970, pp 5-25

Translation: The article presents the thermodynamic characteristics of various processes accompanied by volume changes or by the volume effect. An evaluation is made of the informative nature of the most widespread volumetric and dilatometric research methods, and a comparative evaluation is made of dilatometric and x-ray methods of measuring volume changes. Methods of determining the number of defects in the crystalline structure and of analyzing the types of processes occurring are examined.

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Miscellaneous

USSR UDC: 539.21:536.42

BARANOVSKIY, V. M., GUREVICH, M. Ye., LARIKOV, L. N., KHOMENKO, B. S., SHMATKO, O. A.

"Investigation of **Spatial Effects During Aging**"

Metallofizika. Resp. mezhved. sb. (Physics of Metals. Republic Interdepartmental Collection), 1970, vyp. 27, pp 65-79 (from RZh-Fizika, No 9, Sep 70, Abstract No 9Ye477)

Translation: The article is a brief survey of methods of studying **spatial** effects, with a description of the EAD-65 and AD-2 automatic dilatometers developed at the Institute of Physics of Metals, Academy of Sciences of the Ukrainian SSR. The data obtained on the automatic equipment are compared with those obtained on an optical dilatometer. The **spatial effects during** aging of an alloy of cobalt with 31.89 percent tungsten is calculated. The calculation is compared with experimental data. Authors' abstract.

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1/2 007 UNCLASSIFIED PROCESSING DATE--02OCT70
TITLE--SCANDIUM AND ALKALI ELEMENT HEXAFLUOROACETYLACETONATES -U-

AUTHOR-(03)-GUREVICH, M.Z., STEPIN, B.D., ZELENTSOV, V.V.

COUNTRY OF INFO--USSR

SOURCE--ZH. NEORG. KHIM. 1970, 15(3) 890-2

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--SCANDIUM COMPOUND, ALKALI METAL COMPOUND, ACETYLACETONATE, CHEMICAL SYNTHESIS

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1992/1495 STEP NO--UR/0075/70/015/003/0390/0392

CIRC ACCESSION NO--AP0112489
UNCLASSIFIED

2/2 007 UNCLASSIFIED PROCESSING DATE--02OCT70

CIRC ACCESSION NO--AP0112480

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. M(SC(HFACAC) SUB4), WHERE M EQUALS K, RB, OR CS AND HFACAC EQUALS HEXAFLUOROACETYLACETONATE, WERE PREPD. IN AQ.,ALC. SOLNS. THE COMPDS. M. 227, 231, AND 240DEGREES FOR M EQUALS K, RB, AND CS, RESP., AND SUBLIMED AT 145-250DEGREES.

89

UNCLASSIFIED

6

USSR UDC 615.472:616.12-008.46-[illegible]

GURVICH, O. V., All Union Scientific Research Institute of [illegible] Instrument Building

"Evaluation of the Dynamic Characteristics of an [illegible] System of Extracorporeal Circulation"

Moscow, Meditsinskaya Tekhnika, No 2, 1970, pp [illegible]

Abstract: The dynamics of an automatic system of [illegible] circulation using as a control parameter the average [illegible] in the atrium, were studied. Ordinary nonlinear differential [illegible] describing the processes that take place in the [illegible] of the system are solved in a mathematical model of the physiological functions involved. Forced oscillations constitute the [illegible] operating conditions of the system controlling the artificial [illegible]tricle. The nature of these oscillations is determined by the dynamic properties of the system andperformance of a [illegible]

1/1

USSR UDC 632.95

RAZUMOV, A. I., CHERVICH, P. A., and BAYGIL'DINA, S. YU., (Kazan Chemical and Technological Institute

"A Method of Obtaining Phosphorylated Acylnls"

USSR Authors Certificate No 311922, filed 31 Mar 70, published 10 Nov 71 (from Referativnyy Zhurnal -- Khimiya, No 10 (II), 1972, Abstract No 10N521P by L. V. Razvodovskaya)

Translation: Compounds of the general formula $RR'P(O)CH_2CH_2CHR''OC(O)R'$ (I) (R,R'=alkyl, aryl, alkoxyl, R''=alkyl, haloalkyl) are obtained by the reaction of $RR'P(O)CH_2CH_2OCH{=}CH_2$ (II) with carbon acids. To 0.01 mole II (R=R'=EtO) 0.1 mole CF_3COOH is added dropwise, the temperature rises from 20° to 34°; the mixture is stirred and the temperature is lowered to 20°; it is then distilled to give I (R=R'=EtO, R''=CF_3); yield: 52.0%, boiling point 110°/0.7, n_D^{20} 1.4485, d_4^{20} 1.30. I (R=MeO, R'=Ph, R''=CF_3), yield 41.2%, boiling point 189°/0.5, n_D^{20} 1.4967, d_4^{20} 1.32, is obtained by heating the resulting mixture for 3 hours at 60°. Compounds I may have physiological activity.

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1/2 010 UNCLASSIFIED PROCESSING DATE--02OCT70

TITLE--FLOTATION OF GOLD ORES BY A FROTH SEPARATION PROCESS -U-

AUTHOR-(05)-ZELENOV, V.I., UVAROV, YU.P., GUREVICH, R.I., GORELOVA, A.V., KALASHNIKOVA, T.M.

COUNTRY OF INFO--USSR

SOURCE--TSVET. METAL. 1970, 43(1), 88-9

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS, EARTH SCIENCES AND OCEANOGRAPHY

TOPIC TAGS--GOLD, ORE, QUARTZ, CHEMICAL SEPERATION, FLOTATION

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY FICHE/FRAME--1989/0745 STEP NO--UR/0136/70/043/001/0088/0089

CIRC ACCESSION NO--AP0107287

UNCLASSIFIED

2/2 010 UNCLASSIFIED PROCESSING DATE--020CT70

CIRC ACCESSION NO--AP0107287

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE PURPOSE FO THE PRESENT WORK CONSISTED IN DETG. WHETHER THE FROTH SEPN. TECHNIQUE CAN BE USED FOR THE SEPN. OF AU ORES. THE SEPN. WAS DONE ON A LAB. APP. MIXTS. OF AU AND QUARTZ POWDERS WERE SUBJECTED TO SEPN. WITH THE RESULTS OBTAINED BY MECH. PROCESSES. FLOTATION BY FROTH SEPN. IS BOTH FASTER AND MORE THOROUGH THAN MECH. FLOTATION. ALSO, EXTN. OF AU IS HIGHER BY THE FORMER PROCESS.

UNCLASSIFIED

USSR

UDC 621.396.67:[illegible]

GUREVICH, B. V., BAKAYEV, N. T., OLIFIN, L. [illegible], SMILOVENKO, L. I.

"A Feed Line for Short-Wave Band Antennas"

USSR Author's Certificate No 254587, Filed [illegible] May 67, Published [illegible] (from RZh-Radiotekhnika, No 10, Oct 70, Abstract No 10B93 P)

Translation: The proposed feed line for short-wave band antennas is [illegible] in the form of a wire feeder suspended on supports. To improve matching over a wi[illegible] frequency range and increase the transmitted power, the supports are set at different distances from each other; for instance for a feeder with eight supports, the first spacing is selected in the range of 95-100%, the second--75-85%, the third--[illegible], the fourth--55-65%, the fifth--60-70%, the sixth--70-80% and the seventh--[illegible] of the maximum permissible spacing for the given type of feeder.

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UDC 621.396.677

USSR

GUREVICH, R. V.

"A Cophased Wide-Band Antenna"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 19, 1970, Author's Certificate No 272392, filed 19 Feb 68, p 49

Abstract: This author's certificate introduces a cophased wide-band antenna which consists of a dipole radiator and an active wide-band dipole reflector, feeders, a lengthening loop, step transformers and a bridge with a ballast load in the form of an absorbing line. As a distinguishing feature of the patent, the transmitted power is increased over a wide waveband by taking the wave impedance of the arm of this bridge to which the radiator feeder is connected less than the wave impedance of the other arms and the ballast resistance of the bridge by a factor of 2-3.

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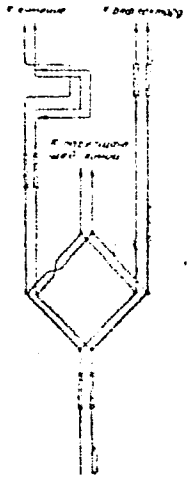
USSR

GUREVICH, R. V., Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 19, 1970, Author's Certificate No 272392, filed 19 Feb 68, p 49



USSR

UDC: 621.391.17:621.396.671.3

OLIFIN, L. K. (Deceased), BUKHVINER, V. Ye., GUREVICH, R. V., and KABAKOVA, A. G.

"Comparison of Receiver Antenna Noise Immunities"

Moscow, Radiotekhnika, No. 6, 1970, pp 66-71

Abstract: The article compares the noise protection provided by antennas 3BS-2 and BS-2, high-frequency antennas used in Soviet broadcasting networks. The BS-2 is recommended as standard for a main radio line 3000 km in length, but has relatively poor noise immunity; the more complex 3BS-2, made up of three BS-2's one behind the other, gives better noise immunity. The measurements on which the comparison is based were made repeatedly and by various means, in 1959-1960, 1966, and more recently. The results of the measurements and descriptions of the procedures and instruments involved are presented. Four of the major results are listed: on practically all frequencies of the shortwave range, the noise immunity of the 3BS-2 was from 1.3 to 3 times that of the BS-2 in Network I; similar results were obtained on Network II; the coefficient of ionic dispersion for network I with a horizontal vibrator was 4-7.5 times less with the 3BS-2 and 3-6 times less with the BS-2; the reliability of communication of the 3BS-2 may exceed that of the BS-2 by as much as 20%.

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USSR

UDC: 621.396.677-111.2(088.8)

GUREVICH, ... V.

"Symphase Range Antenna"

Avt. sv. SSSR (Author's Certificate USSR) Class 21a^4, 46/02, (H 01 q 9/00), No. 272302, application 19.02.68, Publication 21.09.70 (from RZh-Radiotekhnika, No. 3, March 71, Abstract No. 3B80P)

Translation: The proposed antenna consists of a vibrator radiator and an active range vibrator reflector, feeder lines, electrical loops, step triggers, and a bridge with a ballast load in the form of an absorbing line. For the purpose of increasing the penetrative power in a broad range of waves, the characteristic impedance of the bridge leg to which the radiator feeder is connected is chosen less than the characteristic impedance of the other legs and the impedance of the ballast load.

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USSR

UDC 621.791.754:669.295

GUREVICH, S. M., Doctor of Technical Sciences, and SHELENKOV, G. M., Engineer

"Manual Argon-Arc Welding of Titanium Without Bevelling"

Moscow, Svarochnoye Proizvodstvo, No 2 (460), Feb 73, pp 21-22

Abstract: A technology of manual argon-arc welding of titanium was developed by which high-quality butt-welded joints up to 10 mm thick can be produced. The effects of the gap between edges, of the welding conditions, and of the position of the electrode on the seam development were investigated on VT1-0 titanium specimens butt-welded with lanthanum-tungsten electrode in an argon atmosphere. Characteristic dependences of the optimum gap between weldable edges, the optimum diameter of welding wire, and of the welding current are shown. Welded joints of 5-6-mm-thick metal were found to be almost as strong as the initial metal. Some decrease in strength takes place at thicknesses up to 10 mm, in which case equal strength can be attained by increasing the size of weld seams. Three figures, one table, two bibliographic references.

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USSR

UDC: None

GUREVICH, S. B., BABIN, L. V., AND PLIS, A. I.

"Doppler Effects in Acoustical Holography"

Leningrad, Zhurnal tekhnicheskoy fiziki, No 2, 1972, pp 398-408

Abstract: The purpose of this paper is to obtain accurate relationships for locating, expanding, and resolving the restored holographic image in acoustics, to analyze the aberrations that arise in scanning, and to explain the applicability of the mutuality principle in acoustical holography. The term "Doppler effects" is defined as those acoustical effects which arise during recording of the hologram when the radiator and/or the receiver is moved in the acoustical field of the object, and which affect the localization, enlargement, and resolution capability in the restored image. "Scanning" is defined as mechanically or non-mechanically shifting the sound radiator or receiver in the field of the object. Acoustical holography without reference sources when the receiver is moved at ultrasonic velocities is discussed, and conditions for the reliability of the mutuality principles are derived for two specific cases. The authors are connected with the A. F. Ioffe Physico-Technical Institute at Leningrad.

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UDC: 621.397:621.396.4

USSR

GUREVICH, S. B.

"Theory and Calculation of Closed-Circuit Television Systems"

Teoriya i raschet neveshchatel'nykh sistem televideniya (cf. English above), Leningrad, "Energiya", 1970, 236 pp, ill. 2 r. 51 k. (from RZh-Radiotekhnika, No 11, Nov 70, Abstract No 11G161 K)

Translation: The author discusses problems of designing special TV systems from the informational standpoint. Recommendations are given on developing optimum systems, several types of systems are described, and computational examples are presented. A. K.

1/1

USSR UDC 621.385.8:621.385.835.524

GUREVICH, S.B., BERKOVSKAYA, K.F.

"Prospects of Development of Nonvacuum Television Transmitting Device Using A Solid Body Of The Scanistor Type"

Izv. VMEI "Lenin" (Bulletin Of The VMEI [expansion unknown] Lenin), 1970, Book 5, pp 203-207 (from RZh--Elektronika i yeye primeneniye, No 4, April 1971, Abstract No 4B362)

Translation: A scanistor with a divided base layer is proposed. It is possible to realize such a construction after developing the structure of a scanistor in one plane and after insulating the dividing [delitel'nyy] and photosensitive buses from one another. A series of discrete p-n junctions is constructed on one of the surfaces of a wafer of low-resistance n-Si, during which the p-regions are elongated bands. The central part of the unit is compensated by gold. Dark pulses are supplied to the scanistor from discrete components. Discrete photosensitive devices with any spectral characteristic are connected into the commutation circuit. 1 ill. 5 ref. V.Ch.

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USSR

GUREVICH, S. G., PONYRKO, S. A.

"Calculation of the Probability Density of the Linear Transform of a Random Process with Even Distribution"

Izv. Leningr. Elektrotekhn. In-ta. [Leningrad Electrical Engineering Institute News], 1972, No 109, pp 49-52 (Translated from Referativnyy Zhurnal, Kibernetika, No 3, Moscow, 1973, Abstract No 3 V82 by V. Ivanov).

Translation: The equation $\dot{z} + a_0 z = u + a_1$ is studied, where u(t) is a stable Markhov random process with even probability distribution in the interval 0-b; a_0, a_1 are constants. Then density w of the stable two dimensional Markhov process (u, z) satisfies the equation

$$\frac{\partial^2 w}{\partial u^2} - \frac{\partial}{\partial z}[(-a_0 z + u + a_1) w] = 0$$

with boundary conditions

$$\left.\frac{\partial w}{\partial u}\right|_{u=0} = \left.\frac{\partial w}{\partial u}\right|_{u=b} = 0, \quad w(u, \pm\infty) = 0.$$

1/2

USSR

GUREVICH, S. G., PONYRKO, S. A., Izv. Leningr. Elektrotekhn. In-ta., 1972, No 109, pp 49-52.

Recurrent relationships are concluded for sequential determination of the coefficients of the expansion of the function

$$\omega = \sum_{m=0}^{\infty} \sum_{n=0}^{\infty} A_{mn} \cos \beta_m x \psi_n(y),$$

where

$$x = u \sqrt{\frac{a_0}{c}}, \quad y = z a_0 \sqrt{\frac{a_0}{c}} - a_1 \sqrt{\frac{a_0}{c}}, \quad \bar{b} = b \sqrt{\frac{a_0}{c}},$$

$$\beta_m = \frac{m\pi}{\bar{b}}, \quad \psi_n(y) -$$

is a Hermith function.

2/2

USSR UDC 621.791.754.546.821

GUREVICH, S. M., Doctor of Technical Sciences, ZANKOV, V. N., Candidate of Technical Sciences, PRILUTSKIY, V. P., TOPOL'SKIY, V. F., and DYKHNO, S. L., Engineers

"ANT-23A Flux for Argon-Arc Welding of Titanium Alloys"

Kiev, Avtomaticheskaya Svarka, No 6 (243), Jun 73, p 75

Abstract: Argon-arc welding is often used for the manufacture of structures from titanium alloys. Use of the ANT-17A flux permits one-time operation thus ensuring its wide-spread application. However this flux has certain disadvantages in welding thin-sheet metal below 5 mm. Thus the ANT-23A flux has been developed as a highly effective medium to replace the ANT-17A. Using the ANT-23A it is possible to carry out a second welding without first cleansing the surface. Adhesion of the flux and the titanium is much lower and the slag film can be easily removed with a steel brush. The mechanical properties of the joints correspond to those of the base metal. The flux has successfully undergone testing under industrial conditions and is being used in the commercial production of titanium products.

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USSR UDC 621.791.052:620.193:669.295

BLASHCHUK, V. YE., Engineer, GUREVICH, S. M., Doctor of Technical Sciences, SHELENKOV, G. M., Engineer, Electric Welding Institute imeni Ye. O. Paton; TKACHENKO, N. N., Candidate of Technical Sciences, VASILENKO, I. I., Candidate of Technical Sciences, LISKEVICH, I. YU., Engineer, ZAFIYOVSKIY, YU. M., Engineer, ISAYEVA, M. M., Engineer, and MELEKHOV, R. K., Engineer, Physico-mechanical Institute of the Academy of Sciences UkrSSR

"The Tendency of AT3 Titanium Alloy Welded Joints to Mechanical Corrosion Failure"

Moscow, Svarochnoye Proizvodstvo, No 1(471), Jan 74, pp 39-40

Abstract: A study was made of the tendency of AT3 titanium alloy and its welded joints to breakdown at increased temperature and pressure in a 0.6% solution of H_2SO_4, as applicable to the working conditions of hydrolytic apparatus. Specimens of AT3 alloy were cut from 24-mm-thick hot-rolled sheet. The failure of welded joints took place at stresses exceeding the yield limit of the alloy. The conditional limits of the corrosion-fatigue strength in axial load with symmetric tension and compression of AT3 alloy and its manually welded joints are close. Automatically welded joints show, in comparison with AT3 alloy,

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USSR

BLASHCHUK, V. YE., et al., Svarochnoye Proizvodstvo, No 1(471), Jan 74, pp 39-40

some decrease in strength at stresses exceeding the conditional limit of corrosion-fatigue strength. The AT3 alloy and its welded joints show practically the same durability at cyclic torsion. AT3 alloy is recommended for the production of welded experimental hydrolytic apparatus. Four figures, one table, eight bibliographic references.

2/2

USSR UDC 621.791.669.018.8

TRUBILKO, V. I., Engineer, SAVCHENKOV, V. A., Candidate of Technical Sciences, and GUREVICH, S. M., Doctor of Technical Sciences

"Corrosion Resistance of Weld Joints of the Bimetal Titanium-Steel"

Kiev, Avtomaticheskaya Svarka, No 12 (249), Dec 73, pp 66-67

Abstract: The corrosion resistance of joints of the bimetal titanium-steel has been tested at the Khar'kov By-Product Coke Plant The bimetal with sublayer was produced by rolling in vacuum at 1000 degrees C and 20-percent rolling reduction. Vanadium was used as the sublayer. Investigations showed that the corrosion resistance of joints made from the bimetal titanium-steel and from titanium is practically the same. Parts made from this bimetal in 1968 are still functioning. In corrosion resistance this bimetal surpasses Kh18N9T steel by 20 times and can be successfully used for the manufacture of equipment operating in aggressive media instead of titanium and stainless steel. The article contains 1 figure which shows welded parts made of the bimetal titanium-steel and 1 bibliographic reference.
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USSR UDC: 621.791.793:546.821

GRABIN, V. F., Candidate of Technical Sciences, NOVIKOV, YU. K., Engineer, GUREVICH, S. M., Doctor of Technical Sciences, KOMPAN, YA. YU., Candidate of Technical Sciences, NOVIKOVA, D. P., Candidate of Technical Sciences, Institute of Electric Welding imeni Ye. O. Paton, Academy of Sciences of the Ukrainian SSR, CHERKASOV, N. I., Engineer, Tashkent Aviation Plant imeni Chkalov

"Structure and Properties of the Weld Zone During the Electro-Slag Welding of High-Strength Titanium Alloy"

Kiev, Avtomaticheskaya Svarka, No 9, Sep 73, pp 20-23

Abstract: The authors study the reasons for the reduced impact strength in the weld zone during the electro-slag welding of titanium alloy; ways are also sought for increasing ductility. The joints were studied with edges 60 mm thick which were done by electro-slag welding at 1700-2000 amps and 24-25 v, using the AN-T4 flux. Metallographic and x-ray analyses of the weld zone metal in its state after welding show that the metal structure is of the martensite alpha prime phase and residual beta phase type. The results show that the reduction of the impact strength in the weld zone during the electro-slag welding of an alloy of the titanium-vanadium-molybdenum-chromium-iron-zirconium system is conditioned by polygonization which is conditioned by a reversible alpha to beta phase transition and by the development of welding stresses during cooling. It is also shown that annealing at 750°C increases the impact strength of the joints.

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USSR

UDC 621.791.011:669.295

GUREVICH, S. M., Doctor of Technical Sciences, and SHELENKOV, G. M. and BLASHCHUK, V. YE., Engineers

"Weldability of Titanium Alloy VT3"

Moscow, Svarochnoye Proizvodstvo, No 11, 1973, pp 20-21

Abstract: The weldability of titanium alloy AT3, with a complex composition, was studied and compared to unalloyed titanium VT1-0. Composition of VT3 was (in %): 2.5 Al, 0.4 Fe, 0.17 Si, 0.3 Cr, 0.1 O_2, 0.004 H_2, and 0.016 N_2. Samples 24 mm thick were submerged-arc welded with a 10 mm diameter tungsten electrode. Mechanical tests showed that the impact strength and elongation at normal and low temperatures change very little for either material while for AT3 there is a significant lowering of relative reduction in area at low temperatures (-196 C) with a rise in threshold energy. This was a result of increased oxygen content in the seam metal. Thus, the studies showed that the ductility and impact strength of the seam and heat-affect zone metal of the joint, produced by welding AT3 changes very little for different values of threshold energy and are analogous to the changes in technical titanium VT1-0. 3 figures, 2 tables, 7 bibliographic references.

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USSR UDC: 669.29.295:621.791.052

GUREVICH, S. M., BLASHCHUK, V. Ye., ONOPRIYENKO, L. M. Electric Welding Institute imeni Ye. O. Paton, Academy of Sciences UkrSSR.

"Properties of Welded Joints of Alloys in the Systems Ti-V, Ti-V-Al and Ti-Zr-Al with High Oxygen Content"

Metallovedeniye i Termicheskaya Obrabotka Metallov, No 10, 1973, pp 6-8.

Abstract: This work presents a study of the mechanical and corrosion properties of welded joints of the alloys AK1 (Ti + 2.5% V), AK2 (Ti + 2.5% V + 3% Al) and AK3 (Ti + 5% Zr + 2% Al), containing 0.25-0.35% O. Rolled specimens 6 mm thick were studied. The plates were welded by an automatic single-pass argon-arc welding machine using infusable tungsten electrodes. It is shown that the strength, ductility and corrosion resistance of the welded joints are quite close to the figures for the base metal.

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USSR

UDC 621.791.754:546.821

GUREVICH, S. M., BLASHCHUK, V. Ye., Ye. O. Paton Electric Welding Institute, LUK'YANENKO, V. M., SHELENKOV, G. M., Suma Machine Building Plant

"Welding of Chemical Apparatus of AT3 Titanium Alloy"

Kiev, Avtomaticheskaya Svarka, No 11, Nov 72, pp 45-48

Abstract: This work studies the weldability and develops a production technology for welding of chemical apparatus of AT3 titanium alloy. The alloy studied had the following chemical composition: 2.5% Al, 0.41% Fe, 0.17% Si, 0.3% Cr, 0.1% O, 0.004% H, 0.016% N. The butt joints were produced by argon-arc welding with a tungsten electrode by manual welding with X-shaped placement of edges and automatic welding with an infusible electrode. The welding technology developed was used in the production of hydrolytic apparatus with capacities of 6-50 m^3, wall thickness 10-24 mm. The use of AT3 alloy allows interior volume to be increased by 15-35% over lined steel apparatus, increasing interior volume utilization factor from 74% to 95%.

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USSR UDC 620.17:669.295:621.791.052

GUREVICH, S. M., BLASHCHUK, V. Ye., PERADZE, T. A., and VAVILOVA, V. V., Institute of Metallurgy imeni A. A. Baykov

"Mechanical Properties of Weld Joints Made From Titanium Alloy AK-3 With an Increased Oxygen Content"

Moscow, Metallovedeniye i Termicheskaya Obrabotka Metallov, No 1, Jan 73, pp 72-73

Abstract: The mechanical properties of AK-3 titanium alloy weld joints was studied for which the oxygen content was increased in the initial alloy by adding a titanium-oxygen alloy containing 23.63% oxygen during the remelting process, which yielded an oxygen content of 0.31% in the final alloy. After argon-arc welding with a nonconsumable tungsten electrode the oxygen content in the seam metal was 0.384%. Strength properties were slightly lower after annealing than after welding, but ductility and reduction in area were increased after annealing while impact strength also improved after annealing. The conclusion was made that weld joints of AK-3 titanium alloy (Ti-Al-Zr system) with an increased oxygen content (0.35%) possess satisfactory mechanical properties. 2 tables, 8 bibliographic references.

1/1

USSR

UDC 621.791.793:546.821

KOMPAN, YA. YU., GUREVICH, S. M., and NOVIKOV, YU. K., Institute of Electric Welding imeni Ye. O. Paton, and GREBEN', K. A., Institute of Gas, Academy of Sciences Ukr SSR

"Molten Bath Bubbling in the Electroslag Welding of Titanium Alloys"

Kiev, Avtomaticheskaya Svarka, No 10, Oct 72, pp 15-16

Abstract: A study was made to determine the optimum depth of gas jet penetration into the weld bath in the electroslag welding of VT1 titanium alloy with a thickness of 40 mm. The gas bubbles remove nonmetallic inclusions from the bath and allow the fluxes to better react with the oxides in the metal bath. The formula used to determine optimum gas jet penetration, proposed by K. A. Greben', was:

$$h = \omega\sqrt{\gamma d/g\gamma_M}$$

where ω -- jet velocity at the instant of entering the metal bath, m/sec; γ --gas density, kg/m^3; d--jet diameter, m; g--acceleration of gravity, m/sec^2, γ_M--liquid metal density, kg/m^3. For a bath temperature of 1900-2200°C the depth of gas penetration into the molten metal was 13 mm at 1900°C and 14 mm

1/2

USSR

KOMPAN, YA. YU., et al., Avtomaticheskaya Svarka, No 10, Oct 72, pp 15-16

at 2200°C. Bubbling the weld bath with arbon made it possible to obtain joints with a reduced oxygen and nitrogen content, increased ductility, and a finer grain structure in the seam metal. 2 figures, 2 tables, 4 equations.

2/2

USSR

UDC 621.791:546.821

GUREVICH, S. M., ZAMKOV, V. N., KUSHNIRENKO, N. A., Institute of Electric Welding imeni Ya. O. Paton, Acad. Sci. UkSSR

"Welding of Type VT-15 Titanium Alloys"

Avtomaticheskaya Svarka, No 10, 1971, pp 46-49.

Abstract: Many researchers have shown the necessity of decreasing the content of impurity gases in β-alloys of titanium type VT-15 to improve weldability. Improvement of this alloy has occurred in two directions: reduction of the content of impurities and decreasing their harmful influence by introduction of zirconium. This article presents a study of the weldability of alloys of both types. High purity VT-15 alloys and zirconium-containing VT-15 alloys should be joined by cathode-ray welding in severe modes. Argon-arc welding with ANT-19A flux can be recommended for metal with $\delta \leq 5$ mm. The q/δ ratio should be maintained near the design value during welding. The optimal welding rate is 14-18 m/hr. Joints made by these methods have satisfactory mechanical properties following ageing. Preliminary hardening of the base metal has a good influence on the properties of welded joints, assuring equal strength of seams and base metal following optimal heat treatment.

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APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002201030007-6"

USSR UDC: 539.4

Blashchuk, V. Ye., Voynitskiy, A. G., Grabin, V. F., Gurevich, S. M., Kas'yan, V. V., Novikov, N. V.

"Deformation Resistance of AT-2 and AT-3 Titanium Alloys and Their Welded Joints at High and Low Temperatures"

Kiev, Problemy Prochnosti, No 7, 1972, pp 96-99.

Abstract: The deformation resistance of AT-3 and AT-2 alloys and seam metal is studied in the 400-700°K temperature interval. The strength of the metal of seams in these alloys in the interval up to 500°K does not fall below 90% of the strength of the alloys. The temperatures dependences of strength and yield point of the metals of the seams and alloys are similar. At 700°K, the strength of the seam metal drops to 80% of the strength of AT-3 alloy. The ductility of the seam metals at normal and high temperatures is similar to the ductility of the base alloys, but falls below the ductility of the base metal at low temperatures. As temperature drops, the decrease in the value of coefficient α_K is greater in the alloys than in the seam metal, but throughout the entire temperature range studied $\alpha_K > 1$.

1/1

UDC 620.17:669.295:621.791.052

USSR

GUREVICH, S. M., KORNILOV, I. I., BLASHCHUK, V. YE., VAVILOVA, V. V., and MAKSIMOV, YU. A., Institute of Metallurgy imeni A. A. Baykov

"Mechanical Properties of Welded Joints of Titanium Alloys With an Increased Oxygen Content"

Moscow, Metallovedeniye i Termicheskaya Obrabotka Metallov, No 3, 1971, pp 39-41

Abstract: A study was made of the effect of oxygen on the weldability of Ti-V-O and Ti-V-Al-O alloys. Results are presented from estimating the mechanical properties of the welded joints at room temperature. Alloys of 8 compositions were manufactured for the investigation. Data from the chemical and gas analysis of the initial alloys, the results of the effect of oxygen on the mechanical properties of titanium alloys with 2.5% V and 2.5% V + 2% Al at room temperature, and the results of gas analysis of the weld metal were tabulated. From the data it is concluded that the mechanical properties, including impact toughness of the

USSR

GUREVICH, S. M., et al., Metallovedeniye i Termicheskaya Obrabotka Metallov, No 3, 1971, pp 39-41

base metal and the welds of alloys with an oxygen content up to 0.3%, remain high. With 0.5% O in alloys od rhw Ti-V-O system the impact toughness of the weld is the same as that of the base metal. In alloys of the Ti-V-Al-O system with 0.58% O, the plasticity drops sharply as a result of the occurrence of a second phase in the structure. Some microstructural characteristics of one of the alloys are presented. Preliminary conclusions are drawn that alloys of the Ti-V-O system with 2.5% V, and the Ti-V-Al-O system with a.5% V, and the 3-3.5% Al system are less sensitive to oxygen and be welded with an oxygen content up to 0.3% in the base metal.

2/2

USSR UDC 621.791.011:546.811:546.8[illegible]

BLASHCHUK, V. YE., GUREVICH, S.M., ZOTOVA, L.M., LANGER, N.A., GRINEVICH, V.V., and STENDER, N. V., Kiev

"Weldability and Corrosion Resistance of an Alloy of Titanium With 5% Ta"

Kiev, Avtomaticheskaya Svarka, No 6, Jun 71, pp 16-18

Abstract: Development of new chemical products, particularly those in which the basic component of the medium is hydrochloric acid, and introduction of rational technological processes requires the use of new corrosion-resistant structural materials. One of these is titanium and its alloys. An alloy of the system titanium - 5% tantalum with a stable alpha-solid solution has been designated for use in hydrochloric acid in the presence of oxidizers at an elevated temperature. Production of this alloy has been mastered and designated alloy grade 4204. The corrosion resistance of alloys 4204, VT1, and OT4 and their weld joints was studied in 18% HCl at 90°C and with a continuous flow of chlorine gas at the rate of 70 ml/min. It was found that alloy 4204 possesses higher corrosion stability than alloys OT4 and VT1. 4 figures, 1 table, 7 bibliographical references.

1/1

USSR

UDC 621.791.756.011:546.821

GUREVICH, S. M., BLASHCHUK, V. Ye., NOVOKOV, V. I., and LEBEDEV, V. K., Institute of Electric Welding imeni Ye. O. Paton

"Local Thermal Processing of Welded Vessels Made of AT3 Titanium Alloy"

Kiev, Avtomaticheskaya Svarka, No 2, Feb 71, pp 12-14

Abstract: A study was made of the possibilities for removing the residual stresses in the weld seams of AT3 vessels and in the area near the seams by local thermal processing. Because there were no available data on the residual stresses in the AT3 alloy, the nature and amount of these stresses in welded joints of thick sections of the metal had to be studied through experimentation, which was done on approximately square specimens of the alloy. Preliminary work, consisting of heating the specimen to 600-650°C for two hours, then cooling, was to determine the extent to which the residual stresses in the welded seam and its surroundings were removed and whether local heating could reduce the longitudinal residual stresses. The latter received special attention since cracks in titanium alloy welds are usually at right angles to the seam. The residual stresses were measured with DK-20 tensometers. It is conlcuded that local thermal treatment

1/2

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USSR

GUREVICH, S. M., et al, Avtomaticheskaya Svarka, Kiev, No 2, 1971, pp 12-14

is effective in reducing or eliminating residual longitudinal stresses, and such treatment is recommended for circular welds on vessels. A table of the stresses measured with and without local thermal processing is given.

2/2

USSR UDC 621.791.011:669.28

GUREVICH, S. M., NERODENKO, M.M., ALEKSEYENKO, G. N., Institute of Electric Welding imeni Ye. O. Paton, Academy of Sciences, Ukrainian SSR, BIRYUKOVA, T. A., and SHCHUKYN, A. A., Moscow

"Weldability of Some Molybdenum Alloys"

Kiev, Avtomaticheskaya Svarka, No 3, Mar 71, pp 27-29

Abstract: A study was made of the weldability of molybdenum alloyed with carbon and group VIII elements (iron, cobalt, nickel, and irridium). The test procedure is described, and the mechanical properties of welded joints of the molybdenum alloys are tabulated. It was found that iron, cobalt, nickel, and irridium refine the structure of the weld. Group VIII elements increase the difference between the ultimate strength and yield point of joints made of alloys of molybdenum with carbon. In the entire investigated range ofconcentrations of these elements, the ratio $\sigma_{0.2}/\sigma_b$ during bending is minimal for joints of molybdenum-carbon-nickel and molybdenum-carbon-irridium alloys. With an increase in iron content the ultimate strength of the joints of

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USSR

GUREVICH, S. M., et al., Avtomaticheskaya Svarka, No 3, Mar 71, pp 27-29

molybdenum-carbon-iron alloys increases.

The mean hardness of welded joints of molybdenum alloys with δ = 1 mm at various distances from the weld is plotted. These data show that an increase in hardness along the axis of the wled and a decrease at the fusion line are especially characteristic for alloys of the molybdenum-carbon system. Group VIII alloying of molybdenum with carbon leads to a smoother variation of hardness with respect to joint cross section; irridium and nickel have the most favorable effects.

2/2

UDC: 539.4.019.1

USSR

GRABIN, V. F., GUREVICH, S. M., DZYKOVICH, I. Ya., ZAMKOV, V. N., and SABOKAR', V. K.

"Characteristics of the Formation of Intermetallides in Titanium-Copper Joints Produced by Explosion Welding"

Moscow, Fizika i Khimiya Obrabotki Materialov, no 6, Nov-Dec 70, pp 65-69

Abstract: Use has been made of micro-x-ray spectral analysis to study the conditions for the formation of intermetallides in the copper-titanium contact zone in explosion welding. The role of niobium in eliminating the tendency to the formation of intermetallides in the process of welding the β-alloy (Ti--37%, Nb--3%, Al with M1 copper) is explained by the low diffusion mobility of niobium in the alloy which controls the formation rate of brittle phases. It is suggested that a higher content of niobium in the alloy will preclude the formation of intermetallides in the welded joint and raise the thermal stability of welded assemblies as well as widen the range of parameters of explosion welding.

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USSR

UDC 621.791.011:669.295

GUREVICH, S. M., and ZAGREBENYUK, S. D., Institute of Electric Welding imeni Ye. O. Paton Institute

"The Welding of Titanium-Base Refractory Alloys (Review of Literature)"

Kiev, Avtomaticheskaya Svarka, No 12, Dec 70, pp 22-25

Abstract: A brief survey is presented of the various methods for using titanium in refractory alloys. These alloys came into general use in the 50's when builders became aware of their high melting point and durability. First attempts to use unalloyed titanium resulted in failure, since the durability of the metal quickly drops with increasing temperature as a result of the weakening of interatomic cohesion in the crystal lattice. Although it was first assumed that titanium was useless as a refractory metal, researchers found, in the course of developing titanium alloys, that the metal's alloys showed a much sharper increase in durability. The most effective metal for alloying with titanium to produce a refractory steel was determined to be aluminum, which has the additional advantage of being cheap. It was found that a highly durable alloy with little loss in plasticity could be obtained with an aluminum content of 7-8%; such a metal was also seen to be easily weldable.

1/1

USSR UDC 621.791.856.2.03

GUREVICH, S. M., NERODENKO, M. M., POVOD, A. G., TETERVAK, A. F., ASNIS, YE. A., Institute of Electric Welding imeni Ye. O. Paton, Academy of Sciences UkrSSR, GRISHIN, V. K., FERTIKOV, V. G., ESTRIN, V. N., LEVKOVICH, R. M., Moscow

"Equipment for Welding Chemically-Active Refractory Metals in a Controlled High Purity Helium Atmosphere"

Kiev, Avtomaticheskaya Svarka, No 8, Aug 70, pp 45-47

Abstract: A description is given of equipment for manual and automatic electric welding of refractory metals in a controlled atmosphere of high-purity helium. The equipment, which was developed at the Institute of Electric Welding imeni Ye. O. Paton, ensures continuous control of oxygen, nitrogen, and water vapor impurities and helium regneration. It consists of a welding chamber with a vacuum system; 2) equipment for helium purification and 3) a helium purity control system. A photograph and schematic diagram of the installation are presented. The welding chamber (700 mm in diameter, volume, approximately 1000 l) is made of

1/2

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USSR

GUREVICH, S. M., et al., Avtomaticheskaya Svarka, No 8, Aug 70, pp 45-47

1Kh18N9T steel. It is provided with a VN-1 suction pump, making it possible to obtain a 2 x 10^{-5} torr vacuum in the chamber with full load. A sorption method using activated carbon and zeolite at liquid nitrogen temperature at an absorber pressure of 150 atm is used for helium purification. A KhG-type gas chromatograph is used for helium purity control.

2/2

Welding

USSR UDC 621.791.856.3.011:546.821

GUREVICH, S. M., Doctor of Technical Sciences, BLASHCHUK, V. Ye., Engineer, ZAGREBENYUK, S. D., Engineer, KORNILOV, I. I., Doctor of Technical Sciences, GLAZOVA, V. V., Candidate of Chemical Sciences, and MAKSIMOV, Yu. A., Engineer

"Weldability of Titanate Alloys with Increased Content of Oxygen"

Kiev, Avtomaticheskaya Svarka, No 5, May 71, pp 72-73

Abstract: The weldability of alloys of the systems titanium-vanadium and titanium-vanadium-aluminum with 0.25-0.35% of O parts by weight was investigated at the Electric Welding Institute imeni Ye. O. Paton and the Institute of Metallurgy imeni A. A. Baykov, in order to determine the possibility of increasing the oxygen concentration in weldable titanium alloys and the conditions under which welded joints with satisfactory properties, even with an increased O content, can be produced. A demonstrated comparison of mechanical properties of welded joints of the investigated alloys and alloys of the system titanium-molybdenum-zirconium shows that only the alloys with vanadium possess high endurance and plasticity at increased O concentration. Preliminary experiments proved the possibility of using titanium with a raised O concentration for producing satisfactorily weldable titanium alloys. One figure, one table.

1/1

USSR UDC 620.17:669.295:621.791.052

GUREVICH, S. M., KORNILOV, I. I., BLASHCHUK, V. YE., VAVILOVA, V. V., and MAKSIMOV, YU. A., Institute of Metallurgy imeni A. A. Baykov

"Mechanical Properties of Welded Joints of Titanium Alloys With an Increased Oxygen Content"

Moscow, Metallovedeniye i Termicheskaya Obrabotka Metallov, No 3, 1971, pp 39-41

Abstract: A study was made of the effect of oxygen on the weldability of Ti-V-O and Ti-V-Al-O alloys. Results are presented from estimating the mechanical properties of the welded joints at room temperature. Alloys of 8 compositions were manufactured for the investigation. Data from the chemical and gas analysis of the initial alloys, the results of the effect of oxygen on the mechanical properties of titanium alloys with 2.5% V and 2.5% V + 2% Al at room temperature, and the results of gas analysis of the weld metal were tabulated. From the data it is concluded that the mechanical properties, including impact toughness of the

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APPROVED FOR RELEASE: 09/01/2001 CIA-RDP86-00513R002201030007-6"

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GUREVICH, S. M., et al., Metallovedeniye i Termicheskaya Obrabotka Metallov, No 3, 1971, pp 39-41

base metal and the welds of alloys with an oxygen content up to 0.3%, remain high. With 0.5% O in alloys od rhw Ti-V-O system the impact toughness of the weld is the same as that of the base metal. In alloys of the Ti-V-Al-O system with 0.58% O, the plasticity drops sharply as a result of the occurrence of a second phase in the structure. Some microstructural characteristics of one of the alloys are presented. Preliminary conclusions are drawn that alloys of the Ti-V-O system with 2.5% V, and the Ti-V-Al-O system with a.5% V, and the 3-3.5% Al system are less sensitive to oxygen and be welded with an oxygen content up to 0.3% in the base metal.

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USSR

UDC 669.018.8

GUREVICH, S. M., KORNILOV, I. I., VAVILOVA, V. V., ZOTOVA, YE. M., BLASHCHUK, V. YE., and MAKSIMOV, A. M., Academy of Sciences USSR, Institute of Metallurgy imeni A. A. Baykov

"Study of Corrosion Resistance of Titanium Alloys in the Titanium-Vanadium-Oxygen and Titanium-Aluminum-Oxygen Systems"

Moscow, Zashchita Metallov, Vol 7, No 2, Mar-Apr 71, pp 159-160

Abstract: The authors studied the resistance of alloys in the systems mentioned in the title with oxygen contents from 0.1 to 0.5 wt %, vanadium and aluminum contents constant at 2.5 and 3 wt. % respectively, and of their welded joints, to corrosion cracking under stress in fused $MgCl_2$. No intercrystalline cracks were observed visually or with a microscope. Photographs of the microstructure of welded joints of the metal are presented.

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USSR

UDC 621.791.011:669.293

GUREVICH, S. M., NERODENKO, M. M., ASNIS, YE. A., and SMIRNOV, S. V.

"Durability of Niobium Welds under Varying Loads"

Kiev, Avtomaticheskaya Svarka, No 6, 1970, pp 72-73

Abstract: This short article presents the results of tests on the fatigue of niobium and its alloys performed by the Electric Welding Institute imeni Ye. O. Paton. Such tests are important because niobium is a prominent factor in the alloying of refractory metals. The tests were performed to compare welded compounds and the basic metal, and used niobium films 2 mm thick which had not undergone thermal processing, as well as annealed niobium tubes 28 mm in diameter with a wall thickness of 1 mm. The welding was done in a chamber with a controlled atmosphere of type-A argon. A table showing the mechanical characteristics of the metal and the welding is given. The tubes were tested for fatigue in bending in a special adaptation of the Afanas'yev method, all tests being conducted on the basis of $2 \cdot 10^6$ cycles. A photograph showing a niobium film which has undergone the tests is reproduced.

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Acc. Nr.: AP0046768 Ref. Code: UR 0125

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UDC 621.791:620.181:669.295

GRABIN, V. F., ZANKOV, V. N., KUSHNIRENDO, N. A., GUREVICH, S. M.

"Effect of the Cooling Rate After Aging on the Properties of Welded Joints of VT15 Alloy"

Kiev, Avtomaticheskaya Svarka (Automatic Welding), No 1, 1970, pp 9-12 (from Avtomaticheskaya Svarka, No 1, 1970, p 79)

Translation: This article contains a study of the cause of the drop in impact toughness of the weld metal made of VT15 alloy during slow cooling and obtaining a weld metal with satisfactory impact toughness. There are 4 illustrations and an 8-entry bibliography.

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UDC 539.4.015

GUREVICH, S. YE., MAR'YAKOVSKAYA, T. S., and FRIDMAN, Z. G., Moscow

"The Use of Rupture Viscosity Data in Predicting the Effectiveness of Increasing Heat Resistance in Thermoplastic Strengthening"

Moscow, Fizika i Khimiya Obrabotki Materialov, No 3, May/Jun 73, pp 1[illegible]-1[illegible]

Abstract: In order to establish the possibility of using plastic deformation (ε_k^p) for evaluating the maximal stress-rupture strength, the rupture viscosity (K_{1C}^Q) and the stress-rupture strength of 1Kh12N2MF steel were determined after the mechanical thermal treatment (MTT) in 100, 1000, and 10,000 hours. Deformation of this steel during MTT was accomplished at 200°C after which it was subjected to polygonization annealing at 600°C for 100 hours. The stress-rupture test was carried out at 600°C. The results indicated that the value of K_{1C}^Q gradually increases with increasing plastic deformation until it reaches a certain critical deformation (ε_k^p) corresponding to 11%. At this point changes in K_{1C}^Q took place. In every instance the stress-rupture strength increased with increasing deformation extent produced by MTT. The maximum values were reached at deformation equaling the ε_k^p. When deformation exceeded the critical limit, the stress-rupture strength decreased in the course of testing for 1000 and 10,000 hours.

1/1

USSR UDC: 539.385

GUREVICH, S.YE., Institute of Metallurgy imeni A.A. Baykov, Academy of Sciences USSR

"Study of Certain Regularities in the Dispersion of Energy Due to Fatigue as a Function of Applied Stress Level"

Moscow, Sb. "Ustalost' metallov i splavov". "Nauka" Press, 1971, pp 23-31

Translation: A study has been made of the dependence of the overall specific dispersion energy on stress levels by recording the power required by the motor for the circular bending of a cylindrical specimen. It is shown that the energy decreases with increasing stress; for the low-cycle fatigue region this energy becomes minimal and independent of stress. This critical value of the overall specific energy may serve as the power consumption criterion for fatigue failures. In accordance with the regularities for dispersion of energy, the fatigue curve may be divided into five regions. An assumption is made of the nature of changes in the process of fatigue. Based on this assumption, a method of summarizing the damage ability is proposed. (5 illustrations, 18 bibliographic references; summary).

USSR UDC 539.385

GUREVICH, S.Ye. and YEDIDOVICH, L.D., Institute of Metallurgy imeni A.A. Baykov, Academy of Sciences USSR

"Fatigue Crack Propagation Velocity"

Moscow, Sb. "Ustalost' metallov i splavov". "Nauka" Press, 1971, pp 60-64

Translation: Formulas are proposed for determining fatigue crack propagation velocities; the formulas are shown to relate the propagation velocity to the coefficient of stress intensity at the apex of the crack (in the fourth power) as well as with the strain characteristic of the plastic zone near the crack (which depends on the properties of the material). The latter is a function of the zone size and the strain at the crack's apex (or the exponent of strain hardening). The fatigue tests of flat specimens using bending support the above proposition, indicating that the crack propagation velocity is determined not only by the coefficient of stress intensity but is also related to the localized plastic properties of the material in the region adjoining the crack. (2 illustrations, 5 bibliographic references; summary).

1/1

USSR

UDC: 539.385

GUREVICH, S. YE. and MAR'YANOVSKAYA, T. S., Institute of Metallurgy imeni A. A. Baykov, Academy of Sciences USSR

"Determining the Optimal Cyclic Strength of Metals on the Basis of Damageability During Mechanothermal Treatment"

Moscow, Sb. "Ustalost' metallov i splavov". "Nauka" Press, 1971, pp 86-97

Translation: A study was made of the crack propagation resistance (K'_k) of 1Kh18N9T steel as a function of deformation ratio and temperature (ε) under conditions of mechanothermal treatment (MTT) as well as of testing temperatures. The pattern of changes in K_{1s} relative to deformation ratio was used as a basis to determine the critical deformation ratio ε_k^k as the deformation conforming to the inflection of straight lines between K'_{1s}—ε (governed by the growth rate of K'_{1s}) and the appearance of the variability zone. Correlation of deformation values of reversible damage corresponding to the formation of submicroscopic cracks ε_k^n and ε_k^k at the same defor-

1/2

USSR

GUREVICH, S. Ye. et al, "Determining the Optimal Cyclic Strength of Metals on the Basis of Damageability During Mechanothermal Treatment", Sb. "Ustalost' metallov i splavov", 1971, pp 86-97

mation temperatures indicates that ε_k^s is the minimal deformation of reversible damage while ε_k^k is the minimal deformation of irreversible damage. Depending on the specific forming conditions $\varepsilon_k^s = \varepsilon_k^k$ or $\varepsilon_k^s < \varepsilon_k^k$. The critical deformation ratio ε_k^k depends only on MTT temperatures and is independent of the testing temperature. As the MTT temperature is increased, ε_k^k decreases. A definite correlation between the maximum fatigue limit values and the critical deformation ratio ε_k^k has been established. Hence this criterion permits determination of optimal MTT deformation conditions in terms of increasing the cyclic strength of the metal. The effect of increasing the cyclic strength through MTT is governed primarily by the deformation ratio and testing temperature. (7 illustrations, 16 bibliographic references; summary)

2/2

USSR

UDC 669:539.43

IVANOVA, V. S., and GUREVICH, S. YE., (editors)

Fatigue of Metals and Alloys (Ustalost' metallov i splavov), Collection of Articles, Moscow, "Nauka" Press, 1971, 123 p., illustrations, graphs, tables and bibliographic references.

This is a collection of some of the papers presented at the Fifth Conference on Metal Fatigue. The papers deal with problems related to the theory and mechanism of fatigue, kinetics of failure, as well as various aspects of cyclic strength (including composite materials) and hardening procedures. The proceedings of the First Conference on Metal Fatigue (22-24 Sept. 1958) were published in the 1960 collection "Metal Fatigue"; those of the Second Conference (24-27 May 1960) -- in the 1962 collection "Cyclic Strength of Metals"; the Third Conference (5-9 March 1962) -- in the 1963 collection "Metal Strength Under Variable Loads"; the Fourth Conference (14-17 March 1966) -- in the 1967 collection "Metal Strength Under Cyclic Loads." The first three collections were published by the Academy of Sciences USSR Press and were edited by I. A. Oding (Corresponding Member of the Academy), while the fourth collection was published by "Nauka" Press and edited by V. S. Ivanova (Professor and Doctor of Technical Sciences). This edition is intended for researchers, laboratory technicians and design bureau personnel at metallurgical, tool manufacturing, and machine-building plants, instructors and students of higher technical eductional institutions.

1/4

USSR

IVANOVA, V. S., GUREVICH, S. YE., Fatigue of Metals and Alloys, Collection of Articles, Moscow, "Nauka" Press, 1971, 123 p.

TABLE OF CONTENTS

2/ 4

USSR

IVANOVA, V. S., and GUREVICH, S. YE., Fatigue of Metals and Alloys, Collection of Articles, Moscow, "Nauka" Press, 1971, 123 p.

USSR

IVANOVA, V. S., and GUREVICH, S. YE., Fatigue of Metals and Alloys, Collection of Articles, Moscow, "Nauka" Press, 1971, 123 p.

References follow individual articles.

4/4

USSR

GUREVICH, V., Assistant, Tselinograd Medical Institute

"Science in a Young Higher Education Institution"

Moscow, Meditsinskaya Gazeta, 23 Jan 70, p 3

Translation: The Tselinograd Medical Institute was founded relatively recently. The first doctors' graduation was in 1969. However, its youth has not prevented it from becoming a major scientific medical center in the area. Moving away from problems pertaining to local pathology and use of local balneological resources, its scientists are conducting research whose importance goes beyond the framework of special problems.

Thus, it was determined that silicate bacilli utilize silicon dioxide in their vital activity. Having developed strains of silicate bacilli without toxicity for the macroorganism, the authors used them experimentally as a prophylactic antisilicosis agent. Even now elaboration of this problem is very important. The Central Committee of the metallurgical industry workers' union decided to create a problem laboratory to continue the research begun in Tselinograd.
1/3

USSR

GUREVICH, V., et al., Moscow, Meditsinskaya Gazeta, 23 Jan 70, p 3

The work of the staff of the Chair of Faculty Surgery on echinococcosis, and the work of the chair of phthisiatry on the distribution, classification, symptomatology and treatment of tuberculosis, are well known. New data have been obtained about goiter at the Chair of General Surgery.

Space travel has posed many new problems to scientists, and doctors. In their search for solutions to some of these problems the staff of the Chair of Operative Surgery is investigating the effect of severe G forces on vessels.

The Chair of Physiology is investigating the physiological parameters of transplanted extremity tissues and the effect on these parameters of artificially induced hormonal changes.

Many innovations in the problem of exchange blood transfusions have been contributed by the Chair of Pathological Physiology. Theoreticians are working in close contact with the staff of clinical chairs on the problem of exchange blood transfusions as related

USSR

GUREVICH, V., et al., Moscow, Meditsinskaya Gazeta, 23 Jan 70, p 3

to dangerous conditions during surgery.

The team of the Chair of Pathological Anatomy is working on determination of the correlation between internal organs under pathological conditions.

The quality of scientific production of Tselinograd scientists can be judged by the fact that within a relatively short period of time five people have defended doctoral dissertations and 28 scientific workers have become candidates of medical sciences.

One of the problems that the staff of the institute is working on actively is borderline conditions. Recently a visiting session of the Laboratory of the Experimental Physiology of Resuscitation of the Organism, USSR Academy of Medical Sciences, convened in Tselinograd, with the participation of outstanding resuscitation specialists from Moscow, Leningrad, Alma-Ata and other cities of the Soviet Union.

3/3

USSR

UDC: 621.317.757

GUREVICH, V. E., AGAFOV, G. V., BORUKHOVICH, A. P., DURETS, Ye. Ya., RABINOVICH, G. V., Leningrad Electrical Engineering Institute of Communications imeni Professor M. A. Bonch-Bruyevich

"An Analyzer of the Correlation Characteristics of a Pulse-Code Signal"

Moscow, Otkrytiya, Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki, No 9, Mar 72, Author's Certificate No 331322, Division G, filed 6 Nov 69, published 7 Mar 72, p 134

Translation: This Author's Certificate introduces: 1. An analyzer of the correlation characteristics of a pulse-code signal in systems for data transmission by uniform codes. The analyzer contains a controllable delay unit, a coincidence circuit, a source of synchronizing pulses and a pulse counter. As a distinguishing feature of the patent, the device is designed for separate measurement of the correlation factor of two signal trains spaced by the same time interval but located in different places of the code groups. Connected between the output of the coincidence circuit and the input of the pulse counter is an additional coincidence circuit whose controlling input is connected through an additional controllable delay unit to the

1/2

GUREVICH, V. E. et al., USSR Author's Certificate No 331322

output of the source of synchronizing pulses. 2. A modification of this analyzer distinguished by the fact that the effect which the degree of channel loading has on the result is eliminated by connecting a silent signal code group recognition unit to the input of the device. The output of the recognition device is connected through a channel time separation device to the inputs of threshold channel accumulators of a predetermined number of pulses and to the inputs of channel coincidence circuits. The channel time separation device is controlled from the source of synchronizing pulses. The controlling inputs of the channel coincidence circuits are connected to the potential outputs of the corresponding channel accumulators, and the output signals from the coincidence circuits are fed to the input of the silent signal control group counter, the input of each channel accumulator being connected through an inverter to the reset circuit of this accumulator. The pulse outputs of the channel accumulators are connected to the input of the counter for the total number of silence intervals.

2/2

Communications

USSR

UDC 621.374.38

VETYUGOV, A. I. and GUREVICH, V. E.

"Error Probability at the Detection of Fluctuating Pulses by Strobing Method"

Moscow, Radiotekhnika, Vol 25, No 1, Jan 1970, pp 40-43

Abstract: The error probability in the detection of fluctuating, in phase and duration, rectangular pulses in digital communication sustems, by strobing method is considered. The relation between the error probability and statistical parameters of fluctuations and additive noises is investigated, with phase fluctuations of strobing pulses taken into account. A formula is derived which makes it possible to determine the probability of signal omission at arbitrary characteristics of the instant value distribution of additive noises, phase fluctuations of strobing and input pulses, as well as their durations. The dependence of the error total probability in the detection of the rectangular pulse on signal - noise ratio at the computer input is presented in a graph and a table. Original article has two figures and one table and five formulas.

1/1

USSR UDC[537.226+537.311.33]:[537+535]

ARONOV, A. G., GUREVICH, V. G., and LAYKHTMAN, B. D.

"Peculiarity of Phase Transition in Ferroelectric Semiconductors"

V sb. Materialy 6-y Zimney shkoly po teorii yadra i fiz. vysok. energiy, 1971, Ch. 3 (Materials of Sixth Winter School on Nuclear Theory and High-Energy Physics, 1971, Part 3 -- Collection of Works), Leningrad, 1971, pp 125-136 (from RZh-Fizika, No 1, Jan 72, Abstract No 1YE1247 by M. A. ITSKOVSKIY)

Translation: The authors consider the behavior of electron gas in ferroelectric semiconductors. It is shown that as the second-order phase-transition point is approached from the direction of high temperatures ($T > T_c$, T_c = transition temperature), electron interaction results in an infinite increase in specific heat according to the law $\Delta c \sim (T - T_c)^{-1/2}$. This qualitative conclusion regarding the electronic intensification of the specific heat feature also holds for uniaxial crystals, except with a different law of increase, $\Delta c \sim (T-T_c)^{-3/2}$. It is pointed out that quantitative theory requires the consideration of electron-phonon interaction, for which the same type of dependence of the specific heat feature is obtained as for the Debye term, except with a greater coefficient. The effect on the peculiarity of the behavior of the specific heat of dopant ions is also discussed.
1/1

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BAKSENBURG, S. I., GUREVICH, V. I., and LUGANIN, V. A.

"Synthesis of Homogeneous Polarization Radiation Patterns in Single-Reflector Antenna Systems"

Moscow, Antenny, No 12, 1971, pp 34-46

Abstract: The authors analyze polarization patterns PD (the dependence of the radiated field polarization on the angular direction) which are homogeneous, i.e., the field polarization is constant over the entire antenna radiation pattern, for axial-symmetric and offset-feed highly directional reflector antennas. Optimal homogeneous PD have been difficult for form, particularly in antennas having adjustable polarization, and such systems have been hard to design. A rectangular waveguide horn having Huygens' sources distributed over the aperature is used as the primary radiator. The antenna electric field vector components in polar coordinates are used to relate the feed and aperature field phasors. By solving this relationship, the synthesis conditions for a homogeneous PD are obtained and applied to axial-symmetric and circularly, linearly, and elliptically polarized offset-feed reflector antennas. The first two types require that the feed radiates a homogeneous circularly polarized field, while the offset linear PD requires that the radiator field contains a

1/2

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BAKSENBURG, S. I., et al., Antenny, No 12, 1971, pp 34-46

component polarized orthogonally to the basic component and which has an anti-phased radiation pattern with respect to the corresponding amplitude and initial phasing. For the offset elliptical version, the polarization ellipse formed by the electric feed radiation field vector components should be rotated by a certain angle, while the phase patterns of two orthogonal components should differ and the differential phase pattern should be of odd parity. The polarization field structure in the aperature is described for sets of cophased parallel and orthogonal electric and magnetic dipoles and 90° out-of-phase vertical and horizontal electric and parallel electric and magnetic dipole sources. Equations are formulated to relate the feed aperature mismatch to the antenna PD. Thus, without considering the antenna radiation characteristics in the far-field region, the conditions for forming homogeneous PD and determining the polarization structure in the aperature is made possible for various types of primary sources.

2/2

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TITLE--A METHOD FOR REDUCING THE BLIND ZONE OF WEATHER RADAR -U-

AUTHOR-(04)-VARSHAVSKIY, S.I., GORNOSTAYEV, N.V., GOREVICH, V.I., SHEVELA, G.F.
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ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SOME OF THE PROBLEMS INVOLVED IN DETERMINING THE LOWER CLOUD BOUNDARY WITH THE MRL-1 TWO RANGE METEOROLOGICAL RADAR DURING ITS OPERATION IN A VERTICAL SOUNDING REGIME ARE EXAMINED. LIMITATIONS ARISE WHICH ARE ASSOCIATED WITH THE MINIMUM EFFECTIVE RANGE OF THIS RADAR WHICH IS DETERMINED NOT ONLY BY THE DURATION OF THE SOUNDING PULSE, BUT TO A CONSIDERABLE DEGREE BY THE EFFECT OF THE FAR SIDE LOBES OF THE ANTENNA. IN DETERMINING THE LOWER CLOUD BOUNDARY IT IS DESIRABLE TO ELIMINATE THE EFFECT OF THE SIDE LOBES WHILE RETAINING NOMAL RESPONSE IN THE DIRECTION OF THE MAIN LOBE IN THE ANTENNA DIRECTIONAL DIAGRAM. THE MRL SIDE LOBES APPARENTLY CAN BE SUPPRESSED USING AN APPARATUS WHOSE BLOCK DIAGRAM IS SHOWN AND DISCUSSED IN THIS ARTICLE. SUPPRESSION WILL OCCUR IF THE SIGNAL RECEIVED IN THE SUPPRESSION CHANNEL EXCEEDS THE SIGNAL RECEIVED IN THE MAIN CHANNEL IN THE DIRECTION OF THE SIDE LOBES. THE RECEIVER, CONSISTING OF A MAIN CHANNEL AND A SUPPRESSION CHANNEL, MAKES IT POSSIBLE TO SUPPRESS THE SIDE LOBES BY SUBTRACTING FROM THE VIDEOFREQUENCY THE SIGNALS RECEIVED BY THE SUPPRESSION ANTENNA AND THE MAIN ANTENNA FROM THE SIDE LOBES. INITIAL TESTS HAVE SHOWN THAT IT IS POSSIBLE TO COMPENSATE REFLECTIONS FROM LOCAL OBJECTS AND TO REDUCE THE BLIND ZONE, BUT FURTHER TESTS WILL BE MADE IN THE SUMMER OF 1967.